



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,852	01/17/2006	Koji Abe	740709-550	5132
22204	7590	11/26/2010	EXAMINER	
NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128			WEINER, LAURA S	
			ART UNIT	PAPER NUMBER
			1726	
			MAIL DATE	DELIVERY MODE
			11/26/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/564,852

Applicant(s)

ABE ET AL.

Examiner

/Laura S. Weiner/

Art Unit

1726

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11-1-2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-19 is/are pending in the application.
- 4a) Of the above claim(s) 16 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-15, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Species III which is drawn to an electrolyte comprising an alkyne compound containing R25-R27 which are each a hydrogen atom, W is an oxalyl group and Y6 is an alkynyl group having 2-12 carbon atoms and no aromatic compound in the reply filed on 10-14-09 and 12-1-09 is acknowledged. The traversal is on the ground(s) that an electrolyte comprising the above alkyne compound and in addition of an aromatic compound cited in claim 16 and claim 17. This is not found persuasive because prior art reading on just the electrolyte comprising an alkyne compound does not have to contain an additive so this makes the searches different. In addition, an electrolyte comprising an alkyne compound containing R25-R27 which are each a hydrogen atom, W is an oxalyl group and Y6 is an alkyl group having 1-12 atoms was also searched.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 16-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 10-14-09 and 12-1-09.

Terminal Disclaimer

3. The terminal disclaimer filed on 11-1-2010 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 10/584,266 has been reviewed and has not been accepted and has been disapproved. The language of 35 USC 154-156 is unacceptable because USC 155 and 156 do not define the term of the patent, it should instead read 35 USC 154 and 173.

Response to Arguments

4. Applicant's arguments and Declaration filed 11-1-2010 have been fully considered but they are not persuasive.

The rejection of claims 13-15, 18-19 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 and 8 of copending Application No. 10/584,266 in view of Koshina (JP 2003-142075, abstract) remains because the terminal disclaimer was not approved.

The rejection of claims 13-15, 18-19 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamoto et al. (JP 2002-124297, translation) in view of Hamamoto et al. (US 2002/0122988)/(US 6,866,966) or Hamamoto et al. (6,927,001)

and further in view of Koshina (JP 2003-142075, abstract) because Hamamoto et al. ('297) teaches that it is known to have an electrolyte comprising an alkyne compound having formula (I) cited on page 2 of translation in which the compound can be present 0.1-10 wt% and teaching where the Y component can be an alkyl group having 1-12 carbon atoms, an alkynyl group, etc. and teaches that the Formula has the structure $R1-C\equiv C-(CR2R3)_n-O-X-O-Y$ where X can be $O=C-C=O$ or $O=S=O$ or $S=O$ and teaches that the solvent can include EC, PC, VC, etc.

Hamamoto et al. ('988) teaches a battery comprising an electrolyte comprising EC/DMC, a cathode comprising a complex metal oxide such as $LiCoO_2$, which is coated on an aluminum foil, and an anode comprising graphite or a carbonaceous material which is coated on a copper foil where it is known that an electrolyte comprises EC:PC:VC:DEC=25:8:2:65. *[Thus teaching it is known to use 2 wt% of VC in an electrolyte comprising EC and/or PC].* Hamamoto et al. ('988) teaches that the electrolyte solution further comprises **2 wt% of methyl 2-propynyl-carbonate** [R25-R27 are hydrogen, W is a $(C=O)$ and Y6 is an alkyl group, specifically CH_3]. *[Thus teaching that it is known to have 2 wt% of a compound having the same formula as Hamamoto et al. ('266) except that Y6 is an alkyl group instead of an alkynyl group but in which both are taught to be used in Hamamoto et al. ('266) and is used with 2 wt% of VC in an electrolyte comprising EC and/or PC].*

Hamamoto et al. ('001) teaches in column 5, Example 1, a battery comprising a cathode comprising $LiCoO_2$ coated on an aluminum foil, an anode comprising graphite coated on copper foil and an electrolyte comprising PC:DMC and 1.5 wt% VC and 1.5

wt% PS. Hamamoto et al. teaches in column 9, Example 20, Table 10, that Example 1 was repeated except that the solvent was EC/PC/DEC and additives comprising 1.5 wt% VC and 1.5 wt% MPGC. Hamamoto et al. teaches in column 5, Table 1, that MPGC is methyl propargyl carbonate [R25-R27 are hydrogen, W is a (C=O) and Y6 is an alkyl group, specifically CH3]. *[Thus teaching that it is known to have 1.5 wt% of a compound having the same formula as Hamamoto et al. ('266) except that Y6 is an alkyl group instead of an alkynyl group but in which both are taught to be used in Hamamoto et al. ('266) and is used with 1.5 wt% of VC in an electrolyte comprising EC and/or PC].*

The Declaration filed 11-1-2010 does not overcome the rejection because Hamamoto et al. ('297) teaches as stated above an electrolyte comprising EC, PC, VC, etc in an electrolyte comprising an alkyne compound having formula (I) in which the compound can be present 0.1-10 wt% and teaching where the Y component can be an alkyl group having 1-12 carbon atoms, an alkynyl group, etc. and teaches that the Formula has the structure $R1-C\equiv C-(CR2R3)_n-O-X-O-Y$ where X can be $O=C-C=O$ or $O=S=O$ or $S=O$ and teaches that the solvent can include EC, PC, VC, etc. and it is known to use vinylene carbonate in the ratio EC:PC:VC:DEC=25:8:2:65 as taught by Hamamoto et al. ('988) or use vinylene carbonate in the ratio EC/PC/DEC and additives comprising 1.5 wt% VC and 1.5 wt% MPGC as taught by Hamamoto et al. ('001) because Hamamoto et al. ('988) and Hamamoto et al. ('001) teaches that both vinylene

carbonate is known to be used in a battery comprising a solvent comprising PC and DEC and using a compound having the structure $R1-C\equiv C-(CR2R3)_n-O-X-O-Y$ and having the same cathode and the same anode.

Claim Rejections - 35 USC § 103

5. Claims 13-15, 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamoto et al. (JP 2002-124297, translation) in view of Hamamoto et al. (US 2002/0122988)/(US 6,866,966) or Hamamoto et al. (6,927,001) and further in view of Koshina (JP 2003-142075, abstract).

Hamamoto et al. ('297) teaches a battery comprising an electrolyte comprising an alkyne compound having formula (I) cited on page 2 of translation teaching where the Y component can be an alkyl group having 1-12 carbon atoms, an alkynyl group, etc. Hamamoto et al. ('297) teaches Formula has the structure $R1-C\equiv C-(CR2R3)_n-O-X-O-Y$ where X can be $O=C-C=O$ or $O=S=O$ or $S=O$. Hamamoto et al. teaches on page 6, [0018], that the solvent can include EC, PC, VC, etc. Hamamoto et al. teaches on page 6, of the translation that the compound can be present 0.1-10 wt%. Hamamoto et al. teaches on pages 7-8 of the translation, that the battery comprises a cathode comprising $LiCoO_2$ coated on an aluminum foil and an anode comprising a carbon material coated on a copper foil and an electrolyte comprising PC/EC/DEC and the alkyne compound.

Hamamoto et al. ('297) teaches the claimed invention as explained above but does not teach the amount of vinylene carbonate present.

Hamamoto et al. ('988) teaches on page 4, Example 1, a battery comprising an electrolyte comprising EC/DMC, a cathode comprising a complex metal oxide such as LiCoO_2 , which is coated on an aluminum foil, and an anode comprising graphite or a carbonaceous material which is coated on a copper foil. Hamamoto et al. ('988) teaches on page 10, Example 33, that the electrolyte comprises EC:PC:VC:DEC=25:8:2:65. Hamamoto et al. ('988) teaches on page 10, [01844], that the electrolyte solution further comprises **2 wt% of methyl 2-propynyl-carbonate** [R25-R27 are hydrogen, W is a (C=O) and Y6 is an alkyl group, specifically CH_3].

Hamamoto et al. ('001) teaches in column 5, Example 1, a battery comprising a cathode comprising LiCoO_2 coated on an aluminum foil, an anode comprising graphite coated on copper foil and an electrolyte comprising PC:DMC and 1.5 wt% VC and 1.5 wt% PS. Hamamoto et al. teaches in column 9, Example 20, Table 10, that Example 1 was repeated except that the solvent was EC/PC/DEC and additives comprising 1.5 wt% VC and 1.5 wt% MPGC. Hamamoto et al. teaches in column 5, Table 1, that MPGC is methyl propargyl carbonate [R25-R27 are hydrogen, W is a (C=O) and Y6 is an alkyl group, specifically CH_3].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use vinylene carbonate in the ratio EC:PC:VC:DEC=25:8:2:65 as taught by Hamamoto et al. ('988) or use vinylene carbonate in the ratio EC/PC/DEC and additives comprising 1.5 wt% VC and 1.5 wt% MPGC as taught by Hamamoto et al.

('001) because Hamamoto et al. ('988) and Hamamoto et al. ('001) teaches that both vinylene carbonate is known to be used in a battery comprising a solvent comprising PC and DEC and using a compound having the structure $R1-C\equiv C-(CR2R3)_n-O-X-O-Y$ and having the same cathode and the same anode

Hamamoto et al. ('297) discloses the claimed invention except for specifically teaching that the positive electrode composition layer has a density in the range of 3.2-4.0 g/cm³ and the negative electrode comprises a negative electrode composition layer having a density in the range of 1.3-2.0 g/cm³.

Koshina teaches a battery providing a negative electrode comprising a cathode comprising LiCoO₂ having a density of 3.3-3.7 g/cm³ coating on an aluminum foil, an anode comprising graphite having a density of 1.4-1.8 g/cm³ coated on a copper foil and an electrolyte solution. Koshina teaches that the battery has high energy density and high safety without easily causing capacity deterioration even in storing the battery in a high-temperature atmosphere.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a negative electrode comprising a cathode comprising LiCoO₂ having a density of 3.3-3.7 g/cm³ coating on an aluminum foil and an anode comprising graphite having a density of 1.4-1.8 g/cm³ coated on a copper foil as taught by Koshina for the battery taught by Hamamoto et al. ('267) because Koshina teaches that the battery has high energy density and high safety without easily causing capacity deterioration even in storing the battery in a high-temperature atmosphere.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with

Art Unit: 1726

37 CFR 3.73(b).

7. Claims 13-15, 18-19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 and 8 of copending Application No. 10/584,266 in view of Koshina (JP 2003-142075, abstract).

Although the conflicting claims are not identical, they are not patentably distinct from each other because Application No. 10/584,266 claims a secondary battery comprising a negative electrode comprising carbon, a positive electrode and an electrolyte containing vinylene carbonate and di(2-propynyl) oxalate where said vinylene carbonate is added in an amount of 0.1-3% by mass and said di(2-propynyl) oxalate is added in an amount of 0.1-2% by mass. The packing density of the negative electrode active material is 1.3 g/ml or higher. The electrolyte is composed of a mixed solvent of ethylene carbonate and noncyclic carbonate.

Application No. 10/584,26 claims the claimed invention except for citing that the positive electrode composition layer has a density of 3.2-4.0 g/cm³ and that the positive electrode comprises a complex metal oxide of lithium and is provided on aluminum foil.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a positive electrode composition layer having a density in the range of 3.2-4.0 g/cm³ in order to increase battery capacity and since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Koshina teaches a battery providing a negative electrode comprising a cathode comprising LiCoO_2 having a density of 3.3-3.7 g/cm³ coating on an aluminum foil, an anode comprising graphite having a density of 1.4-1.8 g/cm³ coated on a copper foil and an electrolyte solution. Koshina teaches that the battery has high energy density and high safety without easily causing capacity deterioration even in storing the battery in a high-temperature atmosphere.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a negative electrode comprising a cathode comprising LiCoO_2 having a density of 3.3-3.7 g/cm³ coating on an aluminum foil and an anode comprising graphite having a density of 1.4-1.8 g/cm³ coated on a copper foil as taught by Koshina for the battery taught by Hamamoto et al. ('267) because Koshina teaches that the battery has high energy density and high safety without easily causing capacity deterioration even in storing the battery in a high-temperature atmosphere.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

8. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to /Laura S. Weiner/ whose telephone number is 571-272-1294. The examiner can normally be reached on M-H (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Laura S Weiner/
Primary Examiner
Art Unit 1726

November 21, 2010